DOCUMENT RESUME

ED 189 485 CG 014 510

AUTHOR Jones, Lawrence K.
TITLE The Vocational Counseling Effects of the Occu-Sort on Junior and Senior High School Students.
INSTITUTION North Carolina State Univ., Raleigh.
SPONS AGENCY Office of Education (DHEW), Washington, D.C. Women's Educational Equity Act Program.
PUB DATE 79
NOTE 52p.

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Adolescents; Career Counseling; *Career Exploration; Comparative Analysis; *Interest Inventories; Occupational Information; Secondary Education; *Sex Fairness; *Test Validity; *Vocational Interests
IDENTIFIERS *Occu Sort; *Self Directed Search

ABSTRACT

The impact of an occupational card sort, the Occu-Sort (O-S), on the thoughts and activities of rural, suburban, and urban junior/senior high school students was assessed to determine the sex bias/fairness of that card sort as a career interest inventory, as well as the reliability and validity of the occupational code structure. Participants were assigned to one of three groups: control, O-S activity, and SDS (Self Directed Search) activity. Subjects also completed the Vocational Preference Inventory (VPI), the Student Opinion Form (SOF), the Occu-Sort "Plus 3 Level" cards and Vocational Guidance Questionnaires 1, 2, and 3 (VGQ 1, 2, and 3). Results indicated that the O-S suggested more nontraditional occupations to the girls; there were no real differences between the O-S and SDS for boys. There was no difference between the O-S and SDS students in their ability to recall their three-letter code, but the O-S students could name the letters better and evidenced a better understanding of Holland's theory. Over time, O-S occupational codes and concurrent and construct validity remained moderately stable. (Author/HLM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

C10002699

ED189485

THE VOCATIONAL COUNSELING EFFECTS OF THE OCCU-SORT ON JUNIOR AND SENIOR HIGH SCHOOL STUDENTS

CG 014510

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE/Office of Education

The activity which is the subject of this report was produced under a grant from the U.S. Department of Health, Education, and Welfare, Office of Education, under the auspices of the Women's Educational Equity Act. However, the opinions expressed herein do not necessarily reflect the position or policy of the Office of Education, and no official endorsement by the Office of Education should be inferred.

DISCRIMINATION PROHIBITED -- No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance, or be so treated on the basis of sex under most education programs or activities receiving Federal assistance.

JUN 2 1980

THE VOCATIONAL COUNSELING EFFECTS OF THE OCCU-SORT ON JUNIOR AND SENIOR HIGH SCHOOL STUDENTS

Lawrence K. Jones
Department of Counselor Education
North Carolina State University

1979

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Joseph A. Califano, Jr., Secretary

Mary F. Berry, Assistant Secretary for Education.

Office of Education

Ernest L. Boyer, Commissioner

TABLE OF CONTENTS

	Page
INTRODUCTION	1
METHOD	5
Subjects	
Experimental Treatments	
Instruments	
Indexes	
Procedure	
Statistical Analyses	
RESULTS AND DISCUSSION	14
Proportion of Nontraditional Occupations	
Recall and Understanding of Code	
Number of Occupations	
Satisfaction with Vocational Counseling Experience	
Vocational Information Seeking	
Satisfaction and Certainty about Vocational Plans	
Time Spent Thinking about Occupational Future	
Specification of Vocational Planning Criteria	
Need for Information about Oneself	
Need for Occupational and Educational Information	
PSYCHOMETRIC CHARACTERISTICS OF THE O-S	22
Test-Retest Reliability	
Validity: Construct and Concurrent	
Errors in Calculating the Code	
SUMMARY	29
Vocational Counseling Effects	
Psychometric Characteristics	
BIBLIOGRAPHY	31
APPENDIXES	
Appendix A. Explanation for Dropping the Rural Junior High School Students from the Study	33
Appendix B. Occu-Sort Introduction Lesson Plan	34
Appendix C. Self-Directed Search Teacher Instruction Guide	37
Appendix D. Student Opinion Form	38
Appendix E. Vocational Guidance Questionnaire #1	40
Appendix F. Vocational Guidance Questionnaire #2	43
Appendix G. Vocational Guidance Questionnaire #3	45

INTRODUCTION

Numerous questions have been raised about the sex fairness of vocational interest inventories (e.g., Diamond, 1975; Tittle & Zytowski, 1978). As a consequence, the National Institute of Education (Diamond, 1975) developed guidelines for evaluating the sex bias/fairness of career interest inventories. Also, in response to this concern, modifications have been made to existing vocational interest inventories (Campbell, 1974), and new ones have been developed (Prediger & Noeth, 1979).

One promising development has been the finding that the occupational card sort technique seems to broaden the career options of women. Two recent studies are of particular interest. Cooper (1976) compared the effects of the Strong-Campbell Interest Inventory (SCII; Campbell, 1974) with the Non-Sexist Vocational Card Sort (NSVCS; Dewey, 1974) for undecided college females and found that the VCS was more effective than the SCII in broadening career options (i.e., more nontraditional occupations were listed). In a later study, Lawler (1977) compared the VCS with the Self-Directed Search (SDS; Holland, 1970b); the VCS was found to suggest a significantly broader range of occupations than the SDS.

The present study was designed to assess the impact of a recently developed occupational card sort, the Occu-Sort (O-S; Jones, 1977a, 1977b), on the thoughts and activities of junior/senior high school students from rural, suburban, and urban communities. Of particular interest was the proportion of nontraditional occupations suggested to students by the O-S, as well as the proportion of nontraditional occupations in which they later indicated an interest. The O-S was designed to avoid sex bias (Jones, in press-b). The same set of cards was used by both sexes, and the neuter forms of occupational titles were used. In selecting the occupations to be included in the O-S, those having strong sex role associations were avoided. Thus, it was predicted that students' career options would be broadened by being exposed to this experience.

In addition to investigating the above sex bias/fairness issue, several other important issues were investigated. The effect of the O-S on junior and senior high school students was studied in the following areas: (a) understanding and recall of the three-letter occupational code obtained from the O-S, (b) number of occupations suggested by the O-S and being considered later, (c) satisfaction with this vocational counseling experience, (d) frequency and variety of information sought after the experience, (e) satisfaction and certainty of vocational plans, (f) specificity of criteria for making a vocational choice, (g) need for knowledge about oneself, and (h) need for educational and occupational information. In addition, the validity and reliability of the occupational code were investigated.

The principal feature of the Occu-Sort system is a set of 60 cards. On the front of each card are the name of an occupation, its three-letter occupational code according to Holland's (1973) typology, and its General Educational Development (GED) level according to the Dictionary of Occupational Titles (DOT) (U.S. Department of Labor, 1966); on the back is a description of the occupation

as found in the DOT. Following the procedures originally outlined by Tyler (1961), users sort the cards into three piles: Would Not Choose, Might Choose, and Uncertain. The cards in the Would Not Choose pile are then re-sorted into smaller piles according to the person's reasons for rejecting them (e.g., "They require that I travel a great deal," or "These would be boring"). Similarly, the Might Choose cards are sorted into smaller piles according to reasons for their being appropriate (e.g., "They require working with people and I enjoy that"). The Might Choose occupations are then rank-ordered according to the person's preference for entering them. These four steps stimulate individuals to think about and articulate their motivations and values in making a career choice.

In the final step a personal three-letter code based on Holland's (1973) six personality types--Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C)--is calculated. Using this code the individual is guided to occupations which are similar to those placed in the Might Choose pile. In the present study the O-S Self-Guided Booklet (Jones, 1979) was used. With this version of the O-S, students are self-guided through the sorting steps and the calculation of the occupational code, and then they are shown more than 500 occupations organized according to the six Holland types: R, I, A, S, E, and C. In this way an individual's occupational horizons may be widened.

The design, procedures, and questionnaires of this study are similar to those used in a previous study (Zener & Schneulle, 1972, 1976) where the effects on high school students of the Self-Directed Search (SDS; Holland, 1970b)--a self-administered, vocational counseling experience--were studied. Many of the same effects were of interest in evaluating the O-S. Since the present study included the SDS in its design, this study largely replicated the Zener and Schneulle study. Of the several differences, the present study included junior high school students in addition to those in senior high school. This study also included students from rural, suburban, and urban settings.

The following criteria were selected to evaluate the O-S:

1. The student will indicate more interest in nontraditional occupations for his or her sex on the O-S booklet, immediately after having taken the O-S and three weeks later.

2. The student will be able to recall his or her three-letter code, interpret it, and demonstrate an understanding of it immediately after having completed the O-S and three weeks later.

3. The student will consider more occupations on the O-S booklet, immediately after having taken the O-S and three weeks later.

4. The student will be satisfied with this vocational counseling experience.

5. The student will engage in increased vocational information seeking behavior.

6. The student will be more certain and satisfied with his or her vocational plans.

7. The student will spend more time thinking about his or her occupational future.

8. The student will be able to specify more criteria that are important to him or her in making a vocational choice.

9. The student will have less need for having information about himself or herself before beginning to make a vocational choice.

10. The student will be more interested in finding out specific information about jobs and training programs.

To test the effects of the O-S, it was compared to the SDS and a "no-treatment" group. The students who took the O-S were expected to be superior on the above criteria when compared with the SDS and control groups. Since the control group received no other treatment than that ordinarily provided by the school or the students' families, this seemed to be a realistic prediction.

The SDS is a well known, self-administered vocational counseling simulation. In using the SDS, students evaluate their occupational daydreams, activities, competencies, abilities, and vocational interests; from this they calculate a three-letter occupational code. They then use the code to find other related occupations in a booklet called the Occupations Finder (OF; Holland, 1970a). The OF contains about 500 occupations organized according to three-letter codes. For example, those persons having a code of RIE look in the RIE section to find other occupations having this code. They then generate the permutations of this code (IRE, REI, IER, ERI) and look in those sections for additional occupations.

The O-S was expected to be more effective than the SDS for the following reasons: (a) occupations of interest are directly chosen from the cards, the collection of occupations listed in the self-guided booklet is more open to examination, and several steps were taken to weaken the influence of sex stereotypes in the occupations (discussed earlier); (b) the O-S self-guided booklet gives a brief description of Holland's theory and a brief definition of each of the six occupational types; (c) additional occupations may be identified more easily, as the permutations of the three-letter code do not have to be calculated and the headings and subheadings of the occupational groupings have informative, descriptive labels; (d) specific instructions are given regarding steps to take in finding out more information about specific occupations; (e) the psychomotor activity required in the sorting of the cards is qualitatively different and appears to be more absorbing than completing a "paper-pencil test"; (f) the equivalent of the SDS's OF is contained within the O-S booklet and is taken with the student, whereas the OF is viewed as being "reusable" and is turned in when the student has finished; and (g) the student is stimulated to clarify and articulate his or her vocational motivations (i.e., 'What is and is not important to me about these occupations?").

In addition to these a priori comparisons (O-S vs. SDS; O-S vs. control), several other "independent" variables were of interest (a posteriori comparisons). These included the effects of sex, race, socioeconomic status, school level (junior/senior high school), setting (rural, suburban, urban), and the effect of having the students complete the study's questionnaires.

Also of interest were the psychometric characteristics of the O-S occupational code. Test-retest reliability of the occupational code over a three-week period was examined. The concurrent validity of the code was tested by comparing it with the code derived from the Vocational Preference Inventory (VPI; Holland, 1965), the definitive measure of the six occupational types. The O-S raw scores were intercorrelated to see if the hexagonal relationship predicted by Holland's (1973) theory emerged. To further examine this analysis of the O-S's construct validity, the VPI scores were also intercorrelated to compare with those of the O-S to see how they both fit the hexagon. Finally, the extent to which students made errors in calculating their code was studied.

METHOD

Subjects

The participants in this study were students from four junior high schools and three senior high schools in the Wake County (North Carolina) school system, including Raleigh and the surrounding area. Eighth-grade students from the junior highs and primarily tenth-grade students from the senior highs participated. The attendance patterns of the school system were studied so as to select schools which drew students from predominantly rural, suburban, or urban areas of the county. It was necessary to use four junior high schools since it was felt that no one junior high school could adequately represent the Raleigh urban area. Thus, two urban junior high schools were selected and the results combined for them. The eighth-graders were in a vocational exploration class required of all students, and the high school students were from a required social studies class. Socioeconomic status was determined from parent's occupation using Duncan's (1961) Socioeconomic Index of Detailed Occupations. Descriptive information about the students, obtained from the questionnaires the students completed during the study, is presented in Table 1. Data for the rural junior high students have been omitted since the two treatments were too difficult for them to complete. See Appendix A for a detailed explanation.

Experimental Treatments

O-S. On the day prior to using the O-S, the junior high school students (a) discussed their personal work motivations, (b) were given the opportunity to look at the cards briefly, and (c) were given preliminary instructions as to how the cards would be used. The following two days they used the Plus 3 Level set of cards and the second edition of the Self-Guided Booklet (1979). The lesson plan for the "orientation class" is contained in Appendix B. An orientation was considered unnecessary for the high school students; they were given two days (two consecutive classes) to complete the O-S.

SDS. As with the previous group, the junior high school students were given an orientation to the following day's task (see Appendix C). They discussed their personal work motivations and other related topics, briefly examined the SDS booklets, and heard preliminary instructions for their use. The following two days they worked through the SDS, Form E (for easy) assessment booklet, scoring their responses and determining their summary occupational codes. They then used the OF to identify occupations corresponding to their code and its permutations. The high school students were given two days to complete the standard SDS assessment booklet and the OF.

No-Treatment. Classroom instruction and activities for students in this group were unchanged from what they were normally.

Instruments

O-S Plus 3 Level cards. The Plus 3 set of cards is one of three (others are Plus 4 and Plus 5) that may be used with the O-S system. The number refers to the "general educational development" (GED) of the occupations contained

Table 1

Student Characteristics

Group	n	% Sex		% Race		% in 1/3, SES			% in Grade				
		Boys	Girls	White	Black	Lower	Middle	Upper	8	9	10	11	12
Junior High School													
Rural	(See text and Appendix A for explanation of missing data)												
Suburban	107	53	47	85	15	23	43	34	100	-	-	-	-
Urban	83	45	55	63	36	46	23	31	100	-	-	-	-
Senior High School													
Rural	123	45	55	76	24	53	33	14	-	4	46	32	18
Suburban	139	45	55	77	23	27	34	39	-	-	94	3	3
Urban	125	56	44	76	24	26	35	39	-	-	82	13	5
Totals	578	49	51	82	18	32	33	35	33	1	50	10	6

within a set. The GED, counselors will recall, refers to the formal and informal aspects of education that contribute to the worker's "(a) reasoning development and ability to follow instructions, and (b) acquisition of 'tool' knowledges, such as language and mathematical skills" (USDL, 1966, p. A-5; these ratings are contained in the DOT). The Plus 3 set of cards, then, contains occupations having GED levels of 3, 4, 5, and 6--those requiring somewhat less than a high school education through those requiring a college degree. The education required for the occupations included in this set closely resembles the years of school completed by persons 25 to 29 years of age (USDC, 1977). Thus, the Plus 3 set is especially appropriate for groups of high school students in which there is a broad cross-section of vocational aspirations.

Vocational Preference Inventory (VPI). The VPI is a personality inventory developed by Holland (1965), composed entirely of occupational titles. The person taking it indicates the occupations he or she likes. The results, among other things, show the test-taker's resemblance to one or more of Holland's six personality types: R, I, A, S, E, and C.

Student Opinion Form (SOF). The SOF was originally used by Zener and Schneulle (1972) to assess satisfaction with the SDS and was later revised by Cooper (1976) so as to be applicable to career exploration experiences in general. In this version, three items were added to the scale. Part I consisted of 12 statements to which students responded on a 5-point scale, from "Strongly Agree" to "Strongly Disagree." (The four questionnaires used in the study are duplicated in Appendixes D-G.) Part II assessed students' ability to recall and interpret their O-S or SDS occupational code.

Vocational Guidance Questionnaire 1 (VGQ1). The items for the VGQ1 were taken from a questionnaire used by Zener and Schneulle (1972). The first three items ask for descriptive information about the student. Item 4 asks the students what occupations they are considering at that time. Item 5 assesses the students' understanding of Holland's notion of matching occupations with personalities. Items 6C, D, E, and F assess the students' need for occupational and job training information; 6A, G, H, I, and J assess the satisfaction and certainty of students' vocational plans. The mean response rate for these two groups of items was used in the analysis (items G and A were reverse scored). Item 6B assesses the extent to which students need more information about themselves before progressing further in making a vocational choice.

Vocational Guidance Questionnaire 2 (VGQ2). The frequency of nine different types of vocational exploration behavior was assessed in Part I by what has become known as the "Vocational Exploration Behavior Checklist," originally developed by Krumboltz and Schroeder (1965) and slightly modified by Zener and Schneulle (1972). Variety of information seeking was assessed by using the mean "yes-no" responses to the items, and frequency of information seeking was determined from the mean number of times students indicated they had done the action described by each item over the previous three-week period. Item 2 of the VGQ2 asks students, again, what occupations they are considering at that time. Item 3 assesses the time students have devoted to thinking about their occupational future over the previous three-week period. Item 4

assesses the students' understanding of Holland's theory. The questions in Part II assess students' ability to recall and interpret their O-S/SDS occupational code.

Vocational Guidance Questionnaire 3 (VGQ3). The first three items request information about the students' sex, age, and other characteristics of interest. Item 4, as in item 5 of the VGQ1, asks students to match occupations with the Holland types to assess their understanding of the concept. Items 5 and 6 were intended to assess vocational decidedness and comfort, but were discarded because frequent student questions about their wording raised doubts about their validity and reliability. Item 7 was designed to assess students' specificity with respect to identifying their work motivations (i.e., what was important to them in selecting an occupation).

Table 2 relates the questionnaire items to the criteria investigated in the study.

Indexes

Index of similarity. In order to compare the similarity between three-letter codes of the instruments used (e.g., O-S vs. VPI), a numerical index was needed. The seven-point index recommended by Holland (1972) and used by Zener and Schneulle (1972) was adopted. The scores range from 0 to 6; Table 3 shows the probability of obtaining various combinations by chance.

Extent of errors in calculating code. The following numbers were used to indicate the extent of errors in calculating the occupational code: 1 = an error in computation, but no change in the code; 2 = an error which caused a reordering of the letters of the code; and 3 = an error where the person's code contained one or more wrong letters.

Proportion of nontraditional occupations. At the time of this study, the most current statistics showing the proportions of males and females engaged in various occupations were for 1977 (USDC, 1978). At that time women constituted 40.5 percent of the labor force. Thus, nontraditional occupations for women were defined as any occupation in which less than 40.5 percent of the labor force was female. Any occupations where females represented greater than 59.5 percent of those engaged in it were defined as nontraditional occupations for males.

Procedure

With the aid of school guidance counselors, teachers were identified and contacted to determine their willingness to participate in the study. All those contacted agreed to participate, and their classes were selected at random for the two treatment and the no-treatment groups. Since students were assigned at random by a computer to these required classes, random assignment to treatment was assumed. To further check this assumption, the class schedules were carefully checked, and the counselors, teachers, and principal were consulted before assignments were made.

Table 2

Relationship between Questionnaire Items and Evaluative Criteria

Criteria	Questionnaire	Item	Source
Understanding and recollection of occupational code	SOF[a]	Part II	Zener & Schneulle (1972)
	VGQ1[b]	5	" " "
	VGQ2[c]	Part II	" " "
	VGQ3[d]	4	" " "
Number of considered occupations	VGQ1	4	" " "
	VGQ2	2	" " "
Satisfaction with vocational counseling experience	SOF	1-7 & 10-12	" " "
		8-9	Author
Satisfaction and certainty about vocational plans	VGQ1	6A, G, H, I, and J	Zener & Schneulle (1972)
Time spent thinking about occupational future	VGQ2	3	" " "
Specificity of vocational motivations	VGQ3	7	Author
Need for occupational and educational information	VGQ1	6C, D, E, and F	Zener & Schneulle (1972)
Need for information about oneself	VGQ1	6B	" " "
Information-Seeking	VGQ2	A-I	" " " and Krumboltz & Schroeder (1965)

[a]SOF = Student Opinion Form.
[b]VGQ1 = Vocational Guidance Questionnaire 1.
[c]VGQ2 = Vocational Guidance Questionnaire 2.
[d]VGQ3 = Vocational Guidance Questionnaire 3.

Table 3

Scale Used for Describing Similarity between SDS Summary Code and any other three-letter Code[a]

Verbal Description	Chance Expectancy	Index
1st letter of SDS summary code is not included in other (e.g. RIC, CES)	.500	0
1st letter of SDS summary code matches any letter in the other code (e.g. RIC, CRE)	.500	1
1st and 2nd letters of SDS summary code match any two letters in the other code (e.g. RIC, IER)	.250	2
1st letter of SDS summary code matches first letter of other code (e.g. RIC, REA)	.167	3
All three letters of SDS summary code match letters of other code in any order (e.g. RIC, ICR)	.125	4
1st and 2nd letters of SDS summary code match 1st and 2nd letters of other code (e.g. RIC, RIE)	.033	5
Letters and order exactly the same	.008	6

Note: Cases which fit more than one category are given the scale value of the highest category.

[a]Taken from Zener and Schneulle (1972, p. 26).

Those junior high school teachers who were to teach an "orientation" lesson prior to administering the O-S or SDS were given a lesson plan (see Appendixes B and C) and the O-S/SDS materials two weeks in advance to prepare themselves. Consultations were held with them one week later to answer any questions and to insure their readiness. On the first day, the orientation lesson was given and students were introduced to the O-S or SDS. Students began doing the O-S/SDS on the second day and completed it on the third day. Once the O-S/SDS was completed, it was picked up and one-half of the classes were given the SOF (see Figure 1). The other half did not complete the SOF or the next questionnaire, the VGQ1. The one-half who had completed the SOF also completed the VGQ1 and the VPI. As Figure 1 indicates, one-half of the classes assigned to the no-treatment condition completed the VGQ1; the other half was not contacted.

For the senior high school classes, the same pattern was followed except that there was no first day orientation. All treatment classes started on the O-S or SDS the first day and completed it on the second. One-half of these completed the SOF, the VGQ1, and then the VPI. The students in the other treatment classes read or did their normal class activities once finished. One-half of the no-treatment classes completed the VGQ1.

The purpose in having only one-half of the students complete the questionnaire instruments (see Figure 1) was to provide a control for the possibility that the questionnaires influenced the outcomes of the study. If all the students completed the questionnaires, it would be impossible to determine if the "confounded" the results. This "questionnaire control" made it possible later to test the effect of the questionnaires by themselves.

The students in the treatment classes at both junior and senior high school levels were given their O-S/SDS booklets on the day following their having completed them.

The students in the treatment groups were told that a new vocational guidance instrument was being tried out. All directions were printed in the booklets, but students were told to ask for assistance if they had any questions. Either the investigator or his assistant was present with the teachers to assist in coordinating and answering any questions. Students in the no-treatment classes were told that their cooperation was needed in order that materials could be developed which would help them in their vocational planning.

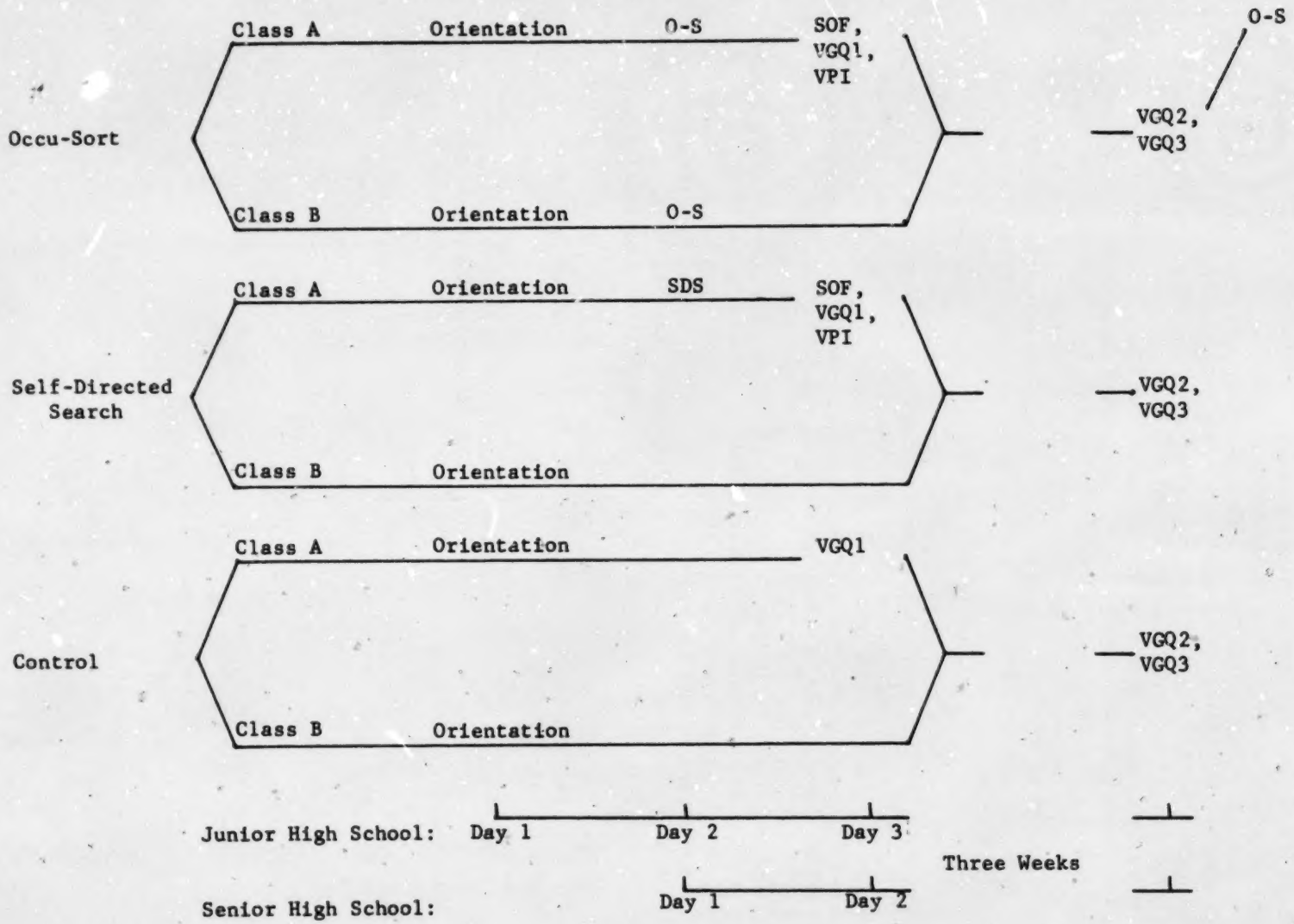
Approximately three weeks later, the same teachers administered the VGQ2, the VGQ3, and then the O-S (to those who had taken it previously; the first steps through the calculation of the code were completed).

Statistical Analyses

As was indicated in the introduction to this report, the O-S students' performance was expected to be superior to the SDS and control students' performance on the ten criteria described. These were the *a priori* comparisons, and they were analyzed using a *t* test. In those cases where the comparisons were nonorthogonal, Dunn's procedure was followed as recommended by Kirk

Figure 1

Experimental Design for Each School



(1968). Other effects were of interest. These included socioeconomic status, race, sex, school level (junior/senior high school), setting (rural, suburban, urban), questionnaire control, and their interaction with the treatment effects. These were the a posteriori comparisons. It was assumed that the effects which would be most influential, however, were sex, school level, and treatment. To test this assumption, an analysis of variance (ANOVA) was computed for a "full model" (all effects and their interactions) and a "simple model" (sex, level, and treatment); these two models were compared using an F statistic:

$$F = \frac{MS_{error\ (Simple\ Model)}}{MS_{error\ (Full\ Model)}}$$

If there was no significant difference between the two models ($p < .05$), the simple model was adopted. Where effects were found which required a multiple comparison test, Duncan's Multiple Range Test (MRT) was used (see Kirk, 1968). In all analyses the .05 level of significance was adopted.

RESULTS AND DISCUSSION

The full and simple models of ANOVA were computed and evaluated for each dependent variable. There was no significant difference found between the models, justifying the use of the simple model. The outcomes for each of the ten criteria are examined in this section. For each criterion the results for the a priori and a posteriori comparisons are given, in that order, and then discussed.

Proportion of Nontraditional Occupations

Three areas were examined in this part of the study: (a) the proportion of nontraditional occupations suggested to students by the O-S or SDS, and the proportion of nontraditional occupations students said they were interested in (b) immediately following the experience and (c) three weeks later.

Proportion suggested to students. The mean proportion of nontraditional occupations suggested by the O-S was .28, and .20 was suggested by the SDS, which was statistically significant ($t = 2.15$). The ANOVA showed significant effects for sex ($p < .0001$) and sex by treatment interaction ($p < .004$). Treatment effects, which were significant ($p < .03$), are not discussed here as they were analyzed using the t test. Table 4 shows that the difference between the O-S and SDS is accounted for by the girls. The O-S suggested more nontraditional occupations to the girls; there were no real differences between the O-S and SDS with respect to boys.

Table 4

Proportion of Nontraditional Occupations Suggested by the O-S and SDS for Boys and Girls

Group	n	Proportion
Boys - O-S	46	.08
SDS	58	.10
Girls - O-S	54	.44
SDS	58	.29

Immediately following. The occupations students listed on VGQ1 were analyzed and t tests were computed for the means (O-S/SDS; O-S/control). Since two nonorthogonal comparisons were being made, Dunn's procedure requires dividing the alpha level: $.05/2 = .025$. Thus, the p level for these comparisons had to be less than .025. The difference between the O-S and SDS means (.32

and .18, respectively) was statistically significant (t = 2.41). The O-S/control comparison was nonsignificant (means were .32 and .24, respectively). When treatment effects of the ANOVA ($p < .02$) were analyzed, however, using Duncan's MRT, the O-S students were shown to have listed a significantly greater proportion of nontraditional occupations than students in either the SDS or O-S groups.

The ANOVA also revealed a strong sex effect ($p < .0001$). When averaged across the three groups, the girls listed .41 nontraditional occupations and boys listed .04. It should be noted here that the majority of occupations are nontraditional for females. Using the criteria for nontraditional used in this study, the occupations listed in the O-S booklet were analyzed. These 523 occupations account for about 90 percent of the occupations which exist and are a representative sample. Of these occupations, 70 percent are nontraditional for females, 15 percent for males, and 15 percent are neutral.

Three weeks later. Using Dunn's procedure where $\alpha = .025$, a statistically significant difference was found between the O-S and SDS means (.26 vs. .21, t = 1.54) but not between the O-S and control groups (.26 and .24, respectively). The ANOVA revealed that the girls listed significantly more ($p < .0001$) nontraditional occupations (.42) than the boys (.04), when averaged across groups.

To summarize the results, then, the O-S consistently broadened the career options of the girls when compared with the SDS. It suggested a greater proportion of nontraditional occupations among girls, and they were considering a greater proportion immediately following and three weeks after the experience.

These findings are encouraging and support earlier studies (Cooper, 1976; Lawler, 1977) in which occupational card sorts have been shown to broaden the career options of women better than more traditional vocational exploratory instruments. That these effects appear to affect primarily females in the O-S treatment group (see Table 4) is rather disappointing. Since so few occupations are "nontraditional" for males and those which are have such strong sex role overtones, it is probably unrealistic to think that a vocational counseling experience should be influential.

The strongest and most consistent differences were found between the O-S and SDS rather than the O-S and control groups. This suggests that the O-S's effect of suggesting a large proportion of nontraditional occupations may need to be strengthened by some type of follow-up exercise in order that a greater proportion be listed as being of interest.

Recall and Understanding of Code

The three-letter occupational code is a critical element in the two treatments. Students' recall and understanding of it were assessed in three ways. First, they were asked to write down the three letters of their code. A comparison was made between the code they recalled and the one they obtained on the O-S or SDS using the "index of similarity" described earlier. Secondly, they were asked to write down the names for the letters they had recalled. One point was given for each letter correctly named. Third, they were asked

to match the Holland personality types with their respective occupations (e.g., see VGQ3 item 4) and to complete a multiple-choice item assessing their understanding of Holland's theory. Assessments were made immediately following the experience and three weeks later.

Immediately following. No significant differences were found between the O-S ($\bar{X}$ = 4.43) and SDS ($\bar{X}$ = 4.45) students in their recollection of the code. None of the ANOVA effects was significant. There were significant differences between students' ability to name the letters; the O-S students' mean was 1.34, and the mean for the SDS students was .53 (t = 3.73). The ANOVA was significant for treatment effects only ($p < .0004$).

No significant differences were found in the *a priori* comparisons (O-S/SDS, O-S/control) for the personality type-occupation matching item. The ANOVA showed a significant level effect ($p < .04$); junior high students' performance was better (3.04) than senior high students' (2.56).

Three weeks later. There was no significant difference between the recall of codes by O-S students (1.59) and SDS students (1.46). The ANOVA was nonsignificant. Again, the O-S students' ability to name the letters in their code (.56) was superior to that of those who took the SDS (.30; t = 2.54). ANOVA was significant for treatment effects only ($p < .01$).

Two t tests for the personality-occupation matching item were run (α = .025), and a significant difference was found between means (t = 2.36), favoring the O-S group (2.56) over the SDS group (2.20). The O-S/control comparison was nonsignificant. In addition to the significant treatment effects ($p < .03$), a level by treatment interaction effect was significant ($p < .0001$). There were no substantial differences among the senior high O-S, SDS, and control groups (2.68, 2.34, 2.29), but there were at the junior high level (2.32, 1.94, 3.09).

The multiple-choice item designed to further assess students' understanding of Holland's theory was analyzed. Two t tests were run (α = .025), and a significant difference (t = 2.72) was found between the O-S (1.68) and control (1.50) groups. Treatment effect was significant for the ANOVA ($p < .009$), and Duncan's MRT revealed significant differences between the two treatment groups and the control group (SDS = 1.63).

To summarize, there was no difference between the students in the two treatment groups in their ability to recall their three-letter code, but the O-S students were much better able to give their code letters the correct name. The treatment groups' ability to match occupations with personality types was no different from that of the controls at the beginning, but three weeks later the results favored the O-S group.

The ability of the students to recall their code was initially good but fell off rapidly over the three-week period. The ability of students to name the letters of their codes was rather poor initially; this was particularly true for the SDS. The difference in performance between the O-S and SDS may be accounted for by the O-S's containing a brief description of the six

personality types. The O-S also contains a brief description of Holland's theory, and this, together with descriptions of the types, probably accounts for the differences found at the three-week assessment point where O-S students showed a greater understanding of their test results than those in the SDS group. It should also be mentioned that the results regarding the matching of occupations with personality type conflict with those of an earlier study (Zener & Schneulle, 1972) where the students who took the SDS performed better than the control group.

Number of Occupations

One of the purposes of the O-S and SDS is to expand the occupational horizons of users. Two methods were used to assess the impact of the treatments. First, the occupations suggested to students were counted. With the O-S, students were asked to "put a check in the box next to each one that interests you." Users of the SDS were asked to write down "some of the occupations whose summary code resembles yours." Secondly, students were asked to list those occupations they were considering at the time.

Suggested to students. It was predicted that a greater number of occupations would be suggested to students by the O-S than by the SDS, and this was confirmed ($t = 5.99$). The O-S suggested 19.48 occupations, on the average, and the SDS suggested 10.83. The ANOVA indicated significant effects for the following: (a) level ($p < .04$)--more occupations were suggested to junior high students (17.59) than senior high students (14.09); (b) treatment ($p < .0001$); (c) sex by level ($p < .045$)--the results are indicated below in Table 5; and (d) sex by treatment by level ($p < .03$), which was not further analyzed since the number of subjects in the cells at the junior high level was too small to be meaningful.

Table 5

Number of Occupations Suggested to Students: Sex by Level

Sex	School Level	
	Junior	Senior
Male	19.56 ($n = 23$)	13.24 ($n = 83$)
Female	15.85 ($n = 26$)	14.91 ($n = 86$)

Immediately following. There were no significant differences found when means of the O-S/SDS and O-S/control comparisons were made. The ANOVA revealed significant level effects ($p < .0001$); junior high students listed more occupations (5.40 vs. 3.96). A significant sex by level by treatment interaction was identified ($p < .007$), but since cell numbers were so small for the junior high level, further analyses were not pursued.

Three weeks later. Here, too, a priori comparisons were nonsignificant. For the ANOVA, sex and level were significant ($p < .002$ and .0001, respectively). Girls listed more than boys (4.39 vs. 3.74), and junior high students listed more than those in high school (4.89 vs. 3.66).

To summarize, nearly twice as many occupations were suggested to O-S students as to SDS students. However, there were no significant differences between these treatment groups and the control group in the number of occupations they were considering immediately following the treatment or three weeks later. This is in contrast to the Zener and Schneulle (1972) study, where differences were significant and in favor of the SDS and VPI groups.

Satisfaction with Vocational Counseling Experience

Items 3 and 6 of the SOF were reverse scored, and then the responses of all 12 items were summed and divided by 12 to produce a mean satisfaction score for each student taking the O-S or SDS. A t test between the means for the two groups (2.20 and 2.28, respectively) was calculated. The difference was nonsignificant. An ANOVA was computed, and sex was significant ($p < .0004$). Males (2.41) indicated greater satisfaction than females (2.07).

The student ratings of the two treatment experiences, generally, were surprisingly low. The results for each item are reported in Table 6. In previous studies with the O-S, the ratings were moderately positive. In one study (Jones & DeVault, 1979), tenth-graders' mean rating was 3.38 overall for the O-S ($n = 47$) and 3.28 ($n = 48$) for the SDS. In another study (Jones, in press-a), Upward Bound students ($n = 44$) gave the O-S a mean rating of 3.27; a small sample of suburban high school students ($n = 14$) gave it a mean rating of 3.28. Finally, Zener and Schneulle's (1972) data indicated that high school students gave the SDS a mean rating of 3.11 (estimated n = approximately 600). Thus, the results from this study are a surprise and a disappointment.

In examining the individual items in Table 6, only three items received a mean rating greater than 3--items 3, 6, and 11. This was true for both the O-S and SDS. These items, taken together, suggest that many found the treatments confusing, without merit, and a waste of time. The conflict between these ratings and previous ones is puzzling. It would have been helpful to have included a question about the students' interest or willingness to participate, as some may have resented the intrusion into their classrooms.

Vocational Information Seeking

Three weeks following the treatments, students were asked (VGQ2) to indicate if they had sought out educational or occupational information during this three-week period. Comparisons were made for variety of information sought. There were no significant differences between the O-S (14.61) and the SDS (14.86) or control (14.86) groups. ANOVA revealed the following effects: sex ($p < .005$; males = 14.99, females = 14.60), setting ($p < .0001$; rural = 14.17, urban = 14.84, suburban = 15.09), as well as sex by treatment ($p < .01$) and level by treatment ($p < .003$) interaction effects (differences were so

Table 6

Means and Standard Deviations for Student Opinion Form Items

	Item	O-S[a]		SDS[b]		Overall[c]	
		M	SD	M	SD	M	SD
1.	Some of the occupations I found seem reasonable to me.	1.80	.49	2.17	.99	2.01	.82
2.	I have some clearer ideas about possible occupations for myself.	2.02	.85	2.03	.83	2.02	.83
3.	I did not learn anything about occupations through this experience.	3.98	.85	3.68	1.05	3.81	.98
4.	I have some clearer ideas about unsuitable occupations for myself.	2.18	.77	2.46	.92	2.34	.87
5.	I learned some things about myself through this counseling experience.	2.40	.89	2.31	.89	2.35	.89
6.	This vocational exploration experience was not a good use of my time.	3.87	.88	4.01	.84	3.95	.86
7.	I would recommend this vocational experience to a friend.	2.33	1.00	2.10	.80	2.20	.89
8.	As a result of this experience I have found other occupations for myself I had not thought of before.	2.43	.89	2.43	1.03	2.43	.97
9.	I now have a clearer idea of what I am looking for in an occupation.	2.17	.89	2.42	.97	2.31	.94
10.	This vocational experience encourages me to find out information about occupations.	2.38	.79	2.10	.78	2.22	.79
11.	The results of this experience are confusing or unsatisfactory.	3.70	1.10	3.60	.95	3.64	1.02
12.	My three-letter, summary (occupational) code seems reasonable for me.	2.19	.90	2.72	1.18	2.48	1.09

Note: None of the items are reverse scored in the table.

[a] $\underline{n}$ = 55.
[b] $\underline{n}$ = 71.
[c] $\underline{n}$ = 126.

small as to be not worth mentioning). The results for frequency of information seeking were similar in that treatment effects were nonsignificant. Only level in the ANOVA was statistically significant ($p < .04$); senior high students sought out information more frequently on the average (9.09 times) than junior high students (7.26).

This was a disappointing, although not a totally unexpected, outcome. Zener and Schneulle (1972) found the same results when evaluating the SDS. One would think, though, if students checked 19 or more occupations in which they had an interest (i.e., the O-S), this would have stimulated more information seeking. Perhaps they needed further encouragement and help.

Satisfaction and Certainty about Vocational Plans

It was predicted that students who participated in the treatments would be more satisfied and certain about their vocational plans. However, the reverse was found to be true. Treatment effects were significant ($p < .02$), but the students in the control group were more positive (2.96) than those in the O-S (2.77) and SDS (2.75) groups, according to Duncan's MRT.

These results, of course, are disappointing. They are also at odds with the findings reported by Zener and Schneulle (1972). Students who took the SDS or VPI were more positive in this respect than those in the control group.

Time Spent Thinking about Occupational Future

The a priori comparisons were nonsignificant; significant effects for level ($p < .0001$) and the level by treatment interaction ($p < .03$) were found for the a posteriori comparisons. Junior high students spent less time (3.12) thinking about their occupational future than those in high school (3.54). The interaction is shown in Table 7. Among the junior high students, apparently, the SDS students spent less time in thinking about their occupational future than the O-S or control groups.

Table 7

Time Spent Thinking about Occupational Future: Level by Treatment

Group	School Level			
	n	Junior	n	Senior
O-S	50	3.42	111	3.58
SDS	73	2.93	129	3.57
Control	63	3.33	142	3.48

Specification of Vocational Planning Criteria

In item 7 of the VGQ3, students were asked to specify those things important to them in making a vocational choice. It was predicted that the O-S students would specify a greater number because they must articulate their criteria in sorting the cards. All differences, however, were nonsignificant.

Need for Information about Oneself

It was expected that students who did the O-S or SDS would feel less of a need for information about themselves (item 6B, VGQ1) immediately afterward. The results did not support this hypothesis; all differences were nonsignificant.

Need for Occupational and Educational Information

It was predicted that students in the treatment groups would express a greater need for occupational and educational information. The a priori comparisons ($\alpha = .025$) showed that the O-S students (2.24) had a greater need for information ($t = 3.56$) than the control students (1.90). There was no significant difference between the O-S and SDS (2.07). Only treatment effects were significant ($p < .004$) for the ANOVA. Duncan's MRT revealed that the mean difference between the SDS and control groups was nonsignificant, but the difference between the O-S and control groups was significant.

Given these differences, one might have expected O-S/control group differences in information seeking, but, as reported earlier, there were none. Zener and Schneulle (1972) reported the same outcome in their study. The students in that SDS group expressed a greater need for information than controls (not true in this study, however), but there was no difference in information seeking. Again, this suggests the need for some type of follow-up activity to capitalize on the increased need for information stimulated by the O-S.

PSYCHOMETRIC CHARACTERISTICS OF THE O-S

Three areas were investigated: (a) test-retest reliability of the O-S occupational code over a three-week period, (b) concurrent and construct validity of the O-S code, and (c) the number and seriousness of student errors made in calculating the code. Sex and school level (junior/senior high school) differences were examined as appropriate.

Test-Retest Reliability

Retest reliability was assessed using two different procedures. First, the seven-point scale of agreement recommended by Holland (1972) was used to compare the O-S codes of students on the first day with the code they received on the O-S three weeks later. Table 8 indicates the extent of agreement overall, by school level, and by sex. Another way of viewing these data is that for 86-89 percent of the students, at least two of the three letters of the code on the first administration appeared in the code obtained three weeks later. The second approach was to correlate the O-S raw scores obtained for the six Holland types on the first administration with those of the second. The Pearson product-moment correlations are indicated in Table 9. With both approaches, scores were corrected for any student errors before the analyses were conducted.

To summarize, the O-S codes were moderately stable over a three-week period. The codes of the senior high school students were generally more stable than those in junior high. Sex differences were quite apparent; the codes of the female students were clearly more stable than those of males.

Validity: Construct and Concurrent

The construct validity of the O-S occupational code was investigated first. According to Holland's (1973) theory, the six occupational types are ordered according to a hexagon in which distances between types are inversely proportional to the size of the correlations between them. Thus, to examine the construct validity, the students' raw scores for the six types were intercorrelated to see if these predicted relationships were supported by the data. As Figure 2 indicates, the majority of the intercorrelations were in the predicted direction at the predicted level of strength. These intercorrelations were also compared with the intercorrelations of the students' VPI raw scores. A visual inspection reveals that they conform to the hexagonal model about equally well. Thus, while the intercorrelations of the O-S do not perfectly match the hexagonal model, they do approximate it fairly well, and as well as the VPI intercorrelations do.

To examine the concurrent validity of the O-S, the seven-point index of similarity was used to compare each student's O-S occupational code with the one obtained from the VPI. The results are reported in Table 10. A moderate degree of similarity was found between the codes. A comparison between the O-S and SDS was also made. The degree of similarity between the SDS and VPI occupational codes was compared with that between the O-S and VPI. The differences at the senior and junior high school levels were evaluated and found

Table 8

Proportion of Students at Each Level of Similarity between First and Second Administration of O-S

Degree of Agreement	Overall	School Level		Sex	
		Junior	Senior	Male	Female
6 Are they exactly alike?	.19	.14	.20	.12	.25
5 Are the first two letters in the same order?	.13	.09	.14	.15	.11
4 The first three letters are the same, but are they out of order?	.17	.09	.19	.12	.22
3 Is the first letter in each code the same?	.16	.23	.14	.15	.16
2 Do the first two letters of one code match any two letters in the other?	.23	.32	.21	.33	.14
1 Does the first letter of either code match any letter in the other code?	.08	.14	.07	.08	.09
0 The first letter of one code is not included in the other code.	.04	.00	.05	.06	.02
n =	107	22	85	52	55

Table 9

Pearson Correlations of O-S Raw Scores for Two Administrations, Three Weeks Apart

Type	Overall	School Level		Sex	
		Junior	Senior	Male	Female
R	62	52	65	59	50
I	58	60	58	52	67
A	54	52	51	48	56
S	63	41	68	33	79
E	66	68	66	61	69
C	73	57	74	44	82
	n = 107	22	85	52	55

Note: Decimals omitted.

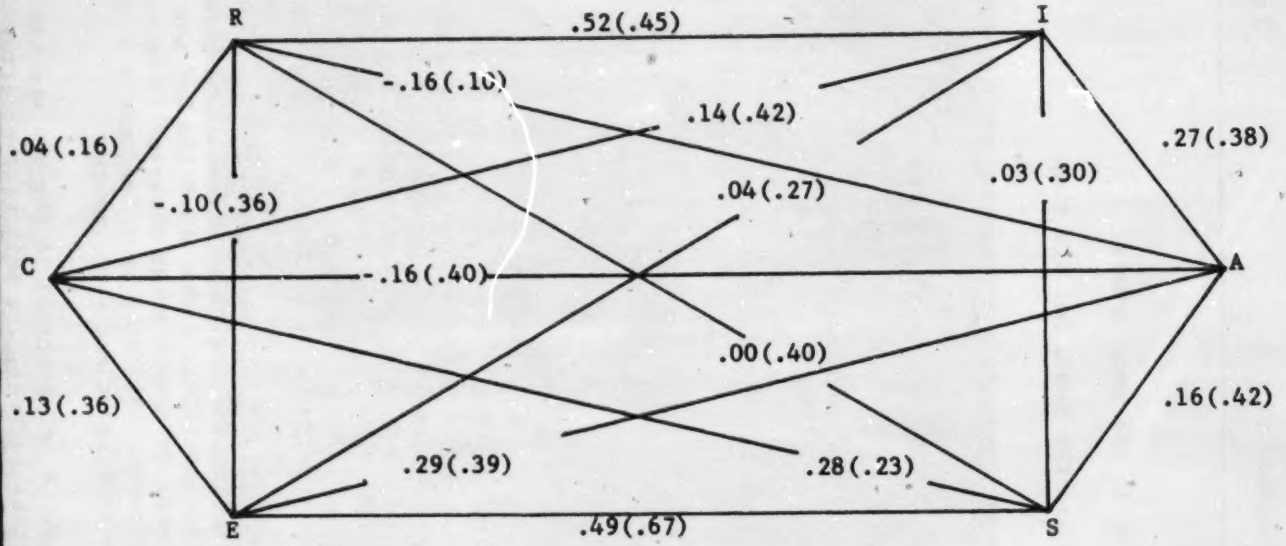
nonsignificant at the .05 level using a two-tailed test (t values were -1.16 and -.59, respectively).

This latter finding of no significant difference between the concurrent validity of the SDS and O-S is particularly encouraging, since previous attempts to develop alternative methods of calculating a Holland occupational code have required complex weighting systems (Campbell & Holland, 1972; Franz, 1972). This finding is buttressed by an earlier study (Jones & De Vault, 1979) which also found no difference.

The overall findings with respect to validity, then, were generally quite encouraging. The correlations among the O-S raw scores were generally in the direction and strength predicted by the Holland hexagonal model, and these correlations fit the hexagon as well as the results of the VPI, Holland's (1973) definitive measure of the six types. A moderate degree of similarity was found between the O-S and VPI codes, and no difference was found between the concurrent validity of the O-S and Holland's SDS.

Figure 2

Correlation Matrix Among O-S and VPI Scores, Overall



NOTE: O-S correlations (n = 121) are outside parentheses, VPI correlations (n = 139) are inside.

Table 10

Proportion of Students at Each Level of Similarity between the O-S and VPI Occupational Code

	Degree of Agreement	Proportion
6	Are they exactly alike?	.04
5	Are the first two letters in the same order?	.15
4	The first three letters are the same, but are they out of order?	.21
3	Is the first letter in each code the same?	.21
2	Do the first two letters of one code match any two letters in the other?	.13
1	Does the first letter of either code match any letter in the other code?	.21
0	The first letter of one code is not included in the other code.	.06

Note: $\underline{n} = 53$.

Errors in Calculating the Code

Since the self-administered mode of the O-S was used, the number of errors students made in the calculation of their occupational code was of interest. Table 11 reports the extent of errors made by students overall and by school level. Since the number of type 3 errors among the junior high group exceeded expectations based on an earlier study (Jones & DeVault, 1979), further analyses were undertaken. The frequency distributions for these students were examined by school and setting. As Table 12 reveals, the students in the "suburban" school made no type 3 errors but 14 percent of those in the "urban" schools did. The difference between the students in these two "urban" schools is probably accounted for by the conditions under which the O-S was administered. Unfortunately, the teacher in school A was observed to be unable to maintain discipline in her classroom. Students were frequently noisy and unruly, and this appears to have affected their performance.

Since the order of the code is not stressed in the O-S and users examine occupations listed under all three letters, the only type of error which could be misleading would be the type 3 error. About 10 percent fell into this category. An examination of the codes of these 11 students revealed that nine

Table 11

Proportion of Students Making Errors Overall and at Junior and Senior High School Levels

Extent of Errors		Overall	School Level	
			Junior	Senior
3	Code contains at least one incorrect letter.	.09	.14	.07
2	Correct letters, but not in proper order.	.02	.00	.04
1	Error in computation, but correct code.	.16	.22	.13
0	No errors, correct code.	.73	.64	.76
	n =	121	36	85

Table 12

Proportion of Errors Made by Urban and Suburban Junior High School Students

Extent of Errors		Urban Schools		Suburban School
		A	B	
3	Code contains at least one incorrect letter.	.38	.14	.00
2	Correct letters, but not in proper order.	.00	.00	.00
1	Error in computation, but correct code.	.12	.29	.21
0	No errors, correct code.	.50	.57	.78
	n =	8	14	14

(82 percent) contained two of the three correct letters and two (18 percent) contained one. In an earlier study (Jones & DeVault, 1979) done with high school students, only four percent made the type 3 error.

While one would hope for no errors in calculating the code, this is probably not realistic. If the self-administered mode of the O-S is viewed as a vocational counseling simulation instead of a "test," one may argue, as Holland (1975) has for the SDS, that the O-S error rate should be compared with the error rate of the average counselor. Nevertheless, it would seem wise to take a few minutes to check students' scoring, especially those who are young or have limited reading and computational skills. The poorer performance of students in school A also confirms the common sense conclusion that test administration conditions may play a potent role in students' performance.

SUMMARY

This study served two broad purposes. First, the effects of an occupational card sort technique on the thoughts and activities of junior and senior high school students were studied. The principal question was, "Do positive vocational counseling effects result from students taking the Occu-Sort?" The second purpose was to evaluate the reliability and validity of the three-letter occupational code obtained from the O-S; that is, "Is the Occu-Sort occupational code sufficiently reliable and valid to assist students in their vocational exploration and planning?" The results are summarized below.

Vocational Counseling Effects

1. When compared with the SDS, the O-S suggested a greater proportion of nontraditional occupations to female students. The O-S females also listed a greater proportion when asked later what occupations they were considering. Male students were unaffected.

2. There was no difference between the O-S and SDS students in their ability to recall their three-letter code, but the O-S students could name the letters better and evidenced a better understanding of Holland's theory.

3. The O-S suggested a greater number of occupations to students than the SDS, but there were no differences between the treatment and control groups when they were asked to list the occupations they were considering. This latter finding conflicts with previous studies.

4. There was no significant difference between the student satisfaction ratings of the two treatments. The overall ratings were moderately negative; this latter finding conflicts with previous studies.

5. There was no difference among the O-S, SDS, and control groups in the variety or frequency with which the students sought out occupational or educational information.

6. Control group students were slightly more satisfied and certain about their vocational plans than those in the treatment groups. This unanticipated finding is at odds with previous studies.

7. There was some evidence among junior high school students that SDS students spent less time thinking about their occupational future than the O-S or control students. Overall, the O-S did not affect this variable.

8. There was no difference among the groups in their ability to specify vocational planning criteria.

9. There was no difference in the students' need for information about themselves when group means were compared.

10. Students who took the O-S expressed a greater interest in occupational and educational information than students in the control group. There was no difference between the SDS and control groups.

Psychometric Characteristics

1. O-S three-letter occupational codes were moderately stable over a three-week period.

2. The results provided moderately positive evidence for the construct validity of the O-S three-letter code. When compared with the VPI, the O-S results matched the hexagonal model equally well.

3. There was no significant difference between the concurrent validity of the O-S and SDS.

4. While the number of errors in calculating the O-S three-letter code was higher than had been observed in an earlier study, further analysis suggested that the conditions under which the O-S was administered were the cause. Overall, the number of errors was low.

BIBLIOGRAPHY

Campbell, D. P. Manual for the SVIB-SCII (Form T325). Stanford, CA: Stanford University Press, 1974.

Campbell, D. P., and Holland, J. L. Applying Holland's theory to Strong's data. Journal of Vocational Behavior, 1972, 2, 353-376.

Cooper, J. F. Comparative impact of the SCII and the Vocational Card Sort on career salience and career exploration of women. Journal of Counseling Psychology, 1976, 23, 348-351.

Dewey, C. F. Exploring interests: A non-sexist method. Personnel and Guidance Journal, 1974, 52, 311-315.

Diamond, E. E. (Ed.). Issues of sex bias and sex fairness in career interest measurement. Washington, DC: U.S. Government Printing Office, 1975.

Duncan, O. D. A socioeconomic index for all occupations. In A. J. Reiss, Jr., Occupations and social status. Glencoe, IL: Free Press, 1961, pp. 109-138.

Frantz, T. T. Reinterpretation of flat SVIB profiles. Journal of Vocational Behavior, 1972, 2, 201-207.

Holland, J. L. The Vocational Preference Inventory. Palo Alto, CA: Consulting Psychologists Press, 1965.

Holland, J. L. The occupations finder. Palo Alto, CA: Consulting Psychologists Press, 1970. (a)

Holland, J. L. The Self-Directed Search. Palo Alto, CA: Consulting Psychologists Press, 1970. (b)

Holland, J. L. Professional manual for the Self-Directed Search. Palo Alto, CA: Consulting Psychologists Press, 1972.

Holland, J. L. Making vocational choices: A theory of careers. Englewood Cliffs, NJ: Prentice-Hall, 1973.

Holland, J. L. Invited comment: Dilemmas and remedies. Personnel and Guidance Journal, 1975, 53, 517-519.

Jones, L. K. Occu-Sort Plus 3 Level, Plus 4 Level, Plus 5 Level. Raleigh, NC: North Carolina State University, School of Education, Office of Publications, 1977. (a)

Jones, L. K. Occu-Sort: A self-guided career exploration system. Raleigh, NC: North Carolina State University, School of Education, Office of Publications, 1977. (b)

Jones, L. K. Occu-Sort: A self-guided career exploration system, 2nd edition. Raleigh, NC: North Carolina State University, School of Education, Office of Publications, 1979.

Jones, L. K. Occu-Sort: Development and evaluation of an occupational card sort system. Vocational Guidance Quarterly, in press. (a)

Jones, L. K. Issues in developing an occupational card sort. Measurement and Evaluation in Guidance, in press. (b)

Jones, L. K., & DeVault, R. M. Evaluation of a self-guided career exploration system: Occu-Sort. School Counselor, 1979, 26, 334-341.

Kirk, R. E. Experimental design: Procedures for the behavioral sciences. Belmont, CA: Brooks/Cole, 1968.

Krumboltz, J. D., & Schroeder, W. W. Promoting career planning through reinforcement and models. Personnel and Guidance Journal, 1965, 44, 19-26.

Lawler, A. C. Career exploration with women using the Non-Sexist Vocational Card Sort and the Self-Directed Search. Unpublished doctoral dissertation, University of North Carolina at Chapel Hill, 1977.

Prediger, D. J., & Noeth, R. J. Effectiveness of a brief counseling intervention in stimulating vocational exploration. Journal of Vocational Behavior, 1979, 14, 352-368.

Tittle, C. K., & Zytowski, D. G. (Eds.). Sex-fair interest measurement: Research and implications. Washington, DC: U.S. Government Printing Office, 1978.

Tyler, L. E. Research explorations in the realm of choice. Journal of Counseling Psychology, 1961, 8, 195, 202.

U.S. Department of Commerce. Statistical abstracts of the United States: 1977. Washington, DC: U.S. Government Printing Office, 1977.

U.S. Department of Commerce. Statistical abstracts of the United States: 1978. Washington, DC: U.S. Government Printing Office, 1978.

U.S. Department of Labor. A supplement to the dictionary of occupational titles. Washington, DC: U.S. Government Printing Office, 1966.

Zener, T. B., & Schneulle, L. An evaluation of the Self-Directed Search (Research Report 124). Baltimore, MD: Johns Hopkins University, Center for Social Organization of Schools, 1972. (ERIC Document Reproduction Service No. ED 061 458).

Zener, T. B., & Schneulle, L. Effects of the SDS on high school students. Journal of Counseling Psychology, 1976, 23, 353-359.

APPENDIX A

EXPLANATION FOR DROPPING THE RURAL JUNIOR HIGH SCHOOL STUDENTS FROM THE STUDY

The students in the rural junior high school were unable to complete either the O-S or SDS in the allotted time. The tasks were obviously difficult for them, and it was decided to discontinue the study with them.

To better understand the reasons for the students' difficulty, several characteristics of the students in this rural, poor area may help. Socioeconomic status (SES) data were not collected for these specific students, but they are from the same community as those students in the rural high school used in this study. Table 1 showed the SES data for them. Since these high school students were in the higher grades (above the dropout age), it is likely that when extrapolating to the lower grades one might estimate the proportion in the lower 1/3 since they are more likely to drop out. Regardless, the proportion of those in the lower 1/3 is very large. Reflecting this, 41 percent of the eighth-graders receive a free lunch, and 7 percent receive a reduced-price lunch. Seventy-nine percent of the eighth-graders were reading below grade level. Thus, it seems reasonable to assume that the students' difficulty with the treatments is a reflection of their disadvantaged backgrounds.

APPENDIX B

OCCU-SORT INTRODUCTION LESSON PLAN

Objectives

Tomorrow you will be involved in an activity called the Occu-Sort. This is an occupational card sorting exercise designed to introduce you to new occupations and start you thinking about choosing an occupation.

Instructions and Examples

Each of you will be given a set of 60 cards with a different occupation written on each card. You will be able to see the cards later in the hour. These cards are to be sorted into three piles:
(write descriptions below on board)

Would Not Choose	Uncertain	Might Choose
Those occupations which do not appeal to you.	Those occupations you are indifferent about or in question about.	Those occupations that appeal to you.

After the cards are sorted into the three piles, each pile must be looked at separately and sorted into even smaller piles according to the different reasons you have used to place them in the original three piles.
For example:

A student sorts the Would Not Choose pile into several small piles. One of these piles contains the cards:

(write on board)

Occupation

1. line repairer
2. heavy truck driver
3. sales route driver

The student's reasons for grouping these are:

(write on board)

Reasons

1. they are outdoor occupations
2. involve travel
3. physical work
4. not very interesting

The student then sorts the Might Choose pile into several smaller piles according to the reasons why they might be chosen. One of the student's small piles contains the cards:

(write on board)

Occupation

1. accountant
2. treasurer
3. bookkeeper

The student's reasons for grouping these are:

(write on board)

Reasons

1. they involve working with math, my favorite subject
2. they involve a lot of responsibility
3. pay is good

Student's Examples and Discussion

Now, I would like for you to get out a sheet of paper. At the top, list several occupations which you feel you would not choose for yourself. Under the list of occupations, write down several of your reasons for not choosing these, and please be specific.

Instructions to the teacher: Call on several students to volunteer their Would Not Choose choice and reasons why. Write them on board and discuss them. Suggest other reasons, if any, for discussion.

Now, list several occupations that you Might Choose or have been considering. Under the list of occupations, write down several of your reasons for considering these, and please be specific.

Again, call on several students to volunteer their Might Choose choices and reasons why. Also write these on the board. Compare reasons, Suggest other possible reasons, if any, for discussion.

Other Possible Reasons for Would Not Choose

Too little pay
More than 40 hr/wk or night work
College education necessary
Too much travel involved
Having a family impractical with job
Job would not allow for much leisure time
Not enough variety in job
Not enough prestige in job
Too much direct supervision
Not many positions available on current job market
Involves outdoor work
Involves indoor work

Involves hazardous work
Involves special talents
Not enough job security
Not enough chance for advancement in job
Not enough interest in job
Not enough leadership in job

Other Possible Reasons for
Might Choose

Pay good
Hours good
No more than high school education needed for job
Travel involved
Job would allow for family
Job would allow for leisure time
Prestige high
Variety in job
Occupation involved in helping others
Independence in job
Positions available on job market
Involves outdoor work
Involves indoor work
Involves a special talent I have
Excellent chance for advancement
Interesting

Last 15 minutes of period, hand out
Occu-Sort cards for students to see.

I want you to have a chance to see the cards and become familiar with them before you sort them tomorrow. Look at the occupation on the front of the card and the description of the occupation on the back of the card. When you finish looking at all the cards, bundle them up and leave them on your desk.

Thank you

APPENDIX C

SELF-DIRECTED SEARCH TEACHER INSTRUCTION GUIDE

Objectives

Tomorrow you will be involved in an activity called the Self-Directed Search. This is an occupational search designed to introduce you to new occupations and start you thinking about choosing an occupation.

Today we want to consider some of the reasons people use in deciding on an occupation. Take out a sheet of paper, and write down several occupations that you think you may be interested in. (Pause) Now write down several reasons why you chose those occupations. Why would this be a good job for you?

Teacher: Call on several students to volunteer reasons for deciding on (or considering) an occupation. Write these on the board. Direct discussion and suggest other reasons to students and discuss.

Reasons for Students to Think About

1-The education required for the job.
2-Is the pay adequate?
3-Are these types of jobs available now?
4-Am I willing to relocate? Travel?
5 Does the job involve working with people?
data?
things?
Which of these do you enjoy working with?
6-Do I have the abilities and talents needed for the job?

Teacher: Hand out the SDS booklets to allow the students to scan them for five minutes and to ask any questions.

APPENDIX D

STUDENT OPINION FORM

Name_____ Male___ Female___ (check one)

School_____

I. Please check (✓) the extent to which you agree with the following statements:

1. Some of the occupations I found seem reasonable to me.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

2. I have some clearer ideas about possible occupations for myself.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

3. I did <u>not</u> learn anything about occupations through this experience.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

4. I have some clearer ideas about unsuitable occupations for myself.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

5. I learned some things about myself through this counseling experience.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

6. This vocational exploration experience was <u>not</u> a good use of my time.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

7. I would recommend this vocational experience to a friend.

8. As a result of this experience I have found other occupations for myself I had not thought of before.

9. I now have a clearer idea of what I am looking for in an occupation.

10. This vocational experience encourages me to find out information about occupations.

11. The results of this experience are confusing or unsatisfactory.

12. My three-letter summary (occupational) code seems reasonable for me.

Strongly Disagree		Undecided		Strongly Agree

II. Other comments:

1. My three-letter summary, occupational code was ___ ___ ___, and the name for each of these is _____, _____ and _____.

2. The thing I liked best about this experience was _____
_____
_____

3. The thing I disliked was _____
_____
_____

APPENDIX E

VOCATIONAL GUIDANCE QUESTIONNAIRE #1

Name_____ School_____

Sex_____ Race_____ Age_____ Grade_____

Read each of the questions carefully and write your answer in the space provided.

1. If you are in high school, please check what type of educational program you are in:
   College Preparatory_____, Vocational Education_____, General Education_____, or Other (give title)_____.

2. What is your father's occupation?_____.

   If not working now, what is his usual or former occupation?_____.

3. What is your mother's occupation?_____.

   If not working, her usual or former occupation?_____.

4. List all of the occupations you are considering right now.

   _____ _____ _____
   _____ _____ _____
   _____ _____ _____
   _____ _____ _____

5. Beside each of the occupations listed below, write the letter of the personality type which is best suited to it.

Occupations	Personality Types
_____1. Salesman	I. investigative
_____2. Mechanic	A. artistic
_____3. Teacher	S. social
_____4. Chemist	E. enterprising
_____5. Musician	C. conventional
_____6. Accountant	R. realistic

(Please turn over to answer questions on back)

6. Check (✓) the extent to which you agree with the following statements:

A. The business of choosing an occupation is very confusing and I don't know where to begin.

Strongly Agree		Neutral		Strongly Disagree

B. I would like to know much more about myself before I begin choosing an occupation.

Strongly Agree		Neutral		Strongly Disagree

C. I need to know much more about occupational opportunities and requirements.

Strongly Agree		Neutral		Strongly Disagree

D. I would like to know what one or two specific occupations are all about.

Strongly Agree		Neutral		Strongly Disagree

E. I have some ideas about what I'd like to do but I need information about the training or education required.

Strongly Agree		Neutral		Strongly Disagree

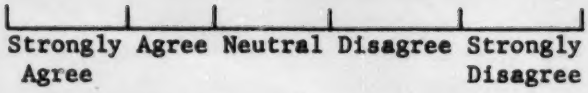
F. I need information about available training programs or colleges I might attend.

Strongly Agree		Neutral		Strongly Disagree

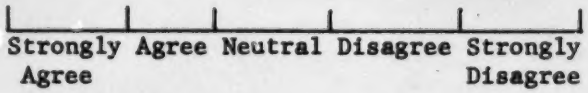
G. I need to talk to a counselor about my vocational choice.

Strongly Agree		Neutral		Strongly Disagree

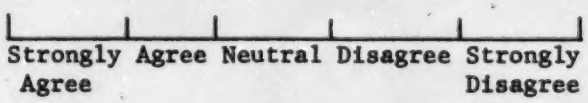
H. I feel I understand the kinds of occupations that are suitable to my personality.



I. I have decided on the occupation I want to enter (for example, nurse, electrical engineer, cook).



J. I feel at ease and comfortable with where I am in making a vocational choice.



APPENDIX F

VOCATIONAL GUIDANCE QUESTIONNAIRE #2

Name_____

School_____

1. Answer the following questions by checking "Yes" or "No." Then, if you check "Yes," answer "How Many Times?" (You write in the number of times.)

	Yes	No	How Many Times?
EXAMPLE: Have you applied for a job within the past three weeks?	✓		2
A. Within the past three weeks, have you talked with other students about yourself and your career opportunities?			
B. Within the past three weeks, have you talked with your parents or relatives about yourself and your career opportunities?			
C. Within the past three weeks, have you read or sent for brochures or books on jobs or occupations?			
D. Within the past three weeks, have you read or sent for brochures or catalogs for college or training programs?			
E. Within the past three weeks, have you visited or made plans to visit colleges, training institutions or places of employment?			
F. Within the past three weeks, have you watched any TV programs, seen exhibits, shows, or radio programs with information on occupations or colleges?			
G. Within the past three weeks, have you gone to see your school counselor either to discuss your career opportunities or to get information about them?			

	Yes	No	How Many Times?
H. Within the past three weeks, have you gone to the library or to a teacher to get more information about jobs or college (or training programs)?			
I. Within the past three weeks, have you talked with anyone about his or her job to see if it is one you would want to do?			

2. List all of the occupations you are considering right now:

_____ _____ _____

_____ _____ _____

3. During the <u>past three weeks</u>, have you spent more or less time <u>than usual</u> thinking about your self and your occupational future? (Place check (✓) between lines.)

Much Less Time	Less Time	About The Same Time	More Time	Much More Time

4. Please check (✓) the correct answer below:

a. _____People tend to choose occupations where they can be with people like themselves.

b. _____Persons who choose an occupation similar to their personality type are more likely to be satisfied and successful in it.

c. _____Both answers a and b are correct.

d. _____Neither answer, a or b, is correct.

If you completed the Self-Directed Search or the Occu-Sort three weeks ago, please answer this question:

My three-letter occupational (or summary) code was ____ ____ ____;

the names for each of these letters are _____, _____,

_____.

APPENDIX G

VOCATIONAL GUIDANCE QUESTIONNAIRE #3

Name_____ School _____

Sex_____ Age_____ Race_____ Grade_____

Read each of the questions below carefully and write your answer in the space provided.

1. If you are in high school, please check (✓) what type of educational program you are in:

   College Preparatory_____, Vocational Education_____, General Education_____, or Other (give title)_____

2. What is your father's occupation?_____
   If not working now, what is his usual or former occupation?_____

3. What is your mother's occupation?_____
   If not working, her usual or former occupation?_____

4. Beside each of the occupations listed below, write the letter of the personality type which is best suited to it:

Occupations	Personality Types
_____1. Salesman	I. investigative
_____2. Mechanic	A. artistic
_____3. Teacher	S. social
_____4. Chemist	E. enterprising
_____5. Musician	C. conventional
_____6. Accountant	R. realistic

Have you decided on an occupation you want to enter? How certain are you? Think about it for a moment . . . . . Now read the statement below, and check (✓) the answer that best describes you:

5. I have decided on the occupation I want to enter (for example, cook, nurse, electrical engineer)

Strongly Agree		Neutral		Disagree	Strongly Disagree

Now that you have checked how decided you are about choosing an occupation, how do you <u>feel</u> about where you are in making a choice? Concerned? Comfortable?

Read the statement below, and check (✓) the answer that best describes you:

6. I feel at ease and comfortable with where I am in making a vocational choice.

Strongly Agree		Neutral		Disagree Strongly
				Disagree

7. Please list below all the things that are important to <u>you</u> in choosing an occupation (for example, some people might write down, "working outdoors"). Use as many or as few of the lines as you need.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Thank you for your help.